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ABSTRACT

A teaching method particularly effective with children who are hard to teach arithmetic and reading is described. Known as a direct instructional system for teaching arithmetic and reading, it is a set of materials in which everything the teacher says and does is specified. This technique is effective in small group instruction. Specific procedures for presenting tasks and evaluating responses are: (1) getting classroom control: seat children close to the teacher; (2) presentation of the learning task: the materials are designed to teach with a sharp focus upon sequential details; (3) inducement of trial responses: the materials are designed for a fast rate of responses from the students and they can be controlled by the teacher's use of signals to secure responses; (4) corrections of trial responses: corrections are built in along with procedures for correcting and recycling; (5) evaluation of mastery: periodic criterion-referenced tests are built into the materials. Directions are given for advancing or recycling students after each test. The strength of the direct instruction approach is that it involves a specific method for teaching a set of skills and concepts. (JD)

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DIRECT INSTRUCTION? DON'T I INSTRUCT DIRECTLY?

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If I were asked that question back in 1971 or before, I would have said "of course I instruct directly. I never do anything indirectly. I am always right up front. I do not teach through the back door. I know what I am teaching, how I am teaching it and how well I have taught it!"

1971 is mentioned because that was one of those "turning points" years in my career. That was the year I became acquainted with direct instruction. I learned how to use this only after many trials with other approaches in my attempts to reach the "hard-to-teach" child. The direct instruction approached worked! My students were learning! They were becoming confident in themselves as learners. They viewed themselves, maybe for the first time in their school years, as being successful. With this confidence in their own ability came, of course, an improved self image. The direct instruction approach was very powerful indeed!

As I continued to use this method I began to study and analyze it. I wanted to find out for myself what is actually involved in it that makes it such a powerful teaching method.

Through my own study here and in the states, I learned that the direct instruction approach was not as simplistic as it appeared on the surface, when I began teaching with it. It involves a whole technological structure that would be impossible

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to cover adequately in this period of time we have together. However through complex, the method is based on logic. It has a clearly defined framework which I believe a professional teacher can use to modify his/her own teaching style to be more successful, particularly with the hard-to-teach students.

When we look at our mission to put these particular students into the mainstream of education, this is no small task.

How often have you heard remarks such as these:

- He is far behind because he comes from a disadvantaged home.
- Her parents are divorced.
- He has a poor self concept.
- Very little attention from the father.
- They move a lot--every two years.
- The mother works.
- He doesn't eat right.
- He's retarded.
- Poor English!

These are neat statements, when you think about them. They relieve the school of all responsibility because all these variables are those which the school cannot control! There are other people, professionals in society, who are trained to hand such problems--social workers, nutritionists, physicians, guidance counselors and mental health workers. These people are trained to handle problems related to the circumstrances mentioned. Teachers do not have this training. One variable that we, as teachers, can control is instruction. There is no other group in society

trained to deal with instruction. That is our job. We the educators, the teachers, are trained to teach. If we don't do the job for which we have been trained, who else will do it? No one. (Engelmann, 1969)

It is an awesome responsibility. If a child hasn't learned, he hasn't been taught and it is our fault, to a large extent. Dr. Devoe Rickert, whom many of you may remember for his outstanding training in behavior management here on Guam a couple of years ago, once said "The one difference between us--the educators and the medical people is that while they can bury their mistakes, we have to live with ours." So we can't pass the buck! We don't need to because we can teach all children, even hard-to-teach children by using Direct Instruction. We know we can. Research reports from University of Oregon (Becker, 1976) and the ABT Report (Stebbins, 1975) on the results of the Follow Through Project, a longitudinal study involving 12,000 children, show that Direct Instruction model of teaching has significantly raised the grade equivalent level of disadvantaged children to the national means in the area of reading and arithmetic and above the mean in spelling and language. Additionally, use of this method has also increased the I.Q. of disadvantaged children by mean of 8 points. On affective measures, these children also show improved self-concepts. According to Engelmann and Becker (1976) in their summary report of the Distar Program in the Follow Through Study, "The high correlation between academic and affective outcomes suggest a need to re-evaluate some interpretations of what turns kids on how they learn to feel good

about themselves" (p. 4). There is no doubt that Direct Instruction works successfully.

Before we go into Direct Instruction, let us step back look at instruction in a number of forms.

Becker and Associates (1975) define instruction as "a set of procedures for producing a change in behavior (learning) toward pre-stated objectives." In their book, Cognitive Learning and Instruction, they discuss of review of "Historic Examplars of Teaching Methods" by Broudy of the University of Illinois (1963).

In his review, Broudy has come up with 5 common denominators of what we call instruction:

1) getting classroom control: procedures employed in motivating students and securing their attention to the task.
2) presentation of the learning task: procedures for presenting tasks to be learned and demonstrating requirements for responses.
3) inducement of trial responses: involves securing responses from the student to see if the task has been learned.
4) corrections of trial responses: involves correcting errors and reinforcing correct responses.
5) institution of test trials for evaluation: procedures for evaluating long term mastery (p. 2).

With these elements common to all instruction, let us look at some of the different kinds of instruction being employed today to see if they contain these 5 components.

LARGE GROUP (WHOLE CLASS) TRADITIONAL METHOD

1) getting classroom control:

motivating is difficult with a large group but it can be achieved if all students have the prerequisite skills and the teacher can continually captivate the attention of the class.

2) presentation of the learning task:

the teacher is usually the key because texts and workbooks only suggest what to do. Methods are not usually proven.

3) inducement of trial responses:

it is very difficult to "check out" 25-30 students to determine how well they are progressing on each task.

4) corrections of trial responses:

usually only a few children are actually checked by the teacher.

5) institution of test trials for evaluation:

usually tests are given weekly or at the end of the term. Often the tests contain information that has not been taught because the teachers believe students should "generalize" even if the general case has not been taught.

INDIVIDUAL PRESCRIBED INSTRUCTION (PROGRAMMED)

1) getting classroom control:

attention is generally no problem because of the individualized nature of the materials.

2) presentation of the learning:

Consists of tapes, programmed texts, slides, records, filmstrips with some individual and small group activities. Key is the teacher's ability to manage so much individual learning because the materials themselves usually do not provide the method, only the content. The teacher has a big responsibility (Scanlon 1971).

3) inducement of trial responses:

securing responses is easy but limited and impersonal.

4) corrections of trial responses:

reinforcement and corrections are delayed until the teacher can correct the student's work. Corrective recycling procedures are left to the teacher.

5) evaluation of Mastery:

this is excellent because built-in criterion referenced tests are designed to evaluate objectives of each lesson.

OPEN CLASSROOM

1) getting classroom control:

it would be anticipated that this would not be a problem because, by design, the open classroom implies that the child is the director of his own learning. However, this places a heavy burden on the teacher who must place each child in a wide selection of materials of his appropriate level of instructions.

2) presentation of the learning task:

generally this is accomplished through conferences, self-checking procedures, work folders, small group skill teaching. This method is generally quite successful with the self-directed child but not with the child who needs structured teaching. The other problems associated with this method is that there is a delay between performance and teacher feedback. Since the emphasis is generally on "learning to learn" instead of specific objectives, evaluation is difficult, particularly where basic skills are involved.

3) inducement of trial responses:

direction is very limited for the child who is not self-directed. Usually there is no specified procedure for correcting errors of a child who is slow.

4) correction of trial responses:

without specific procedures for eliciting correct responses after errors, it is difficult to reinforce correct responses.

5) evaluation of mastery:

it is difficult to evaluate mastery in the absence of clearly stated objectives other than the "learning-to-learn" type.

DISTAR SMALL GROUP INSTRUCTION

Distar is an acronym for Direct Instructional System for Teaching Arithmetic and Reading. It is a set of materials in

which everything the teacher says and does is specified. All corrections and reinforcement procedures are built in. (Haring 1977)

Small group teaching has been employed for use with basal readers, but here again the text is generally the vehicle for imparting instruction. It usually does not give specific procedures, only suggestions to the teacher. The Distar programs do give specific procedures for presenting tasks and evaluating responses.

1) getting classroom control:
   having the children sitting close to the teacher is motivating in itself. Reinforcement is unpredictable so children are motivated to remain on task.
2) presentation of the learning task:
   the materials are designed to teach to the general case. All prerequisite skills are built in.
3) inducement of trial responses:
   the materials are designed for a fast rate of responses from the students. They can be controlled by the teacher's effective use of signals to secure responses.
4) corrections of trials responses:
   corrections are built in along with procedures for correcting and recycling.
5) evaluation of Mastery:
   periodic criterion-referenced tests are built into the materials. directions are given for advancing or recycling students after each test.

This discussion parallels a similar one in Becker (1975).

It can be seen that all the methods examined do have some form of the five elements described by Broudy (1963). Each method has its strength based on the purpose for which it was designed. The strength of the direct instruction approach is that it involves a specific method for teaching a set of skills and concepts. Let us now look at the "what" and "how" of direct instruction.

The "what:" is a set of programming strategies, that is, development of written instructional content (Peryon 1976).

Direct instruction is developed around three basic contructs, all aimed at teaching to the General Case. Unless the goal of instruction is a generalizability, learning may be little more than rote memory.

1) Discriminations: Controlling the features of the concepts being taught so that the discrimination is consistent with only one interpretation (Markle, 1970). In teaching the sound for the symbol "m" by traditional methods, one would see this presentation in a typical basal text or workbook:

Example:

m ---- | drawing of a woman (mother) |

The implication here is that the child will learn the sound of the letter /m/ by association with the initial consonant in the word for the picture, presumably "mother." Another example often seen in basals in that of a letter "a" and a picture of what may be an apple. In both cases it can be seen that there are many interpretations for what the child may see in the picture

opposite the letter. For "mother: one may inter woman, lady, teacher, happy, sad, smiling, curly hair, glasses, looking, and any number of other interpretations, none of which has anything to do with the sound of the letter "m." The same can occur with the letter "a" and its corresponding picture of an apple, Possible interpretations are red, large, small, juicy, good, yellow, sweet, cherry, fruit--all depending on the child's experience and knowledge. What is needed is a clear discrimination of what is required as a response when the child is presented with the letter "m." That is simply the sound associated with the letter--/mmm/. No pictures are appropriate because the response is clearly an auditory one. Direct instruction involves a presentation of examples of what the discrimination is and also what it is not. For example, the sound of "m" is /mmm/ and it is not /aa/. Evaluation of a child's responses becomes easy when a clear discrimination is made of what is correct and not correct. This discrimination is based on the critical features of the concept. In the case of the sounds for letters, the critical feature is the sound and not related words. This critical feature or attribute is identified and then controlled so that the child can make a clear discrimination of the response required.

2) Sequencing. In teaching concepts, all the prerequisite skills are built in. Nothing is assumed. For example, in teaching the child to read whole words such as "man," there are many skills needed before the child can look at the word and say /man/. These foundational skills are: directionality--ability to read

from left to right; sound-symbols recognition--produce the sound for each letter; blending--the ability to sound out each letter consecutively without stopping between the letters. All of these skills must be taught if a child is expected to generalize the strategy so that he can later read unknown words he encounters. In direct instruction all these skills are sequenced in a logical manner so that each provides a step for learning the next skill.

3) Operations is the third basic construct involved in programming strategies of direct instruction. Let's look for a moment at operations in the physical world. Starting a car involves a number of steps in the total operation, leading to the outcome that the engine will start and one will be able to move the car from one place to another. On analysis of the steps one will see that they contain certain characteristics common to all operations in the physical world.

(1) each step is empirical can be seen, felt or heard.

(2) each step is functional--omission of any step precludes the outcome of the operation.

(3) reinforcement is consistent with each step and provides immediate feedback.

The physical environment is a good teacher. Let's look now at the symbolic world of the classroom. When presented with the world "run" in a reader, the child is expected to look at it and say /run/.

(1) Are the steps overt? No, one cannot jump inside the child's head and see or hear step each.

(2) Do the steps preclude the outcome? No, if he misses a step, he can eventually say the word--but as a teacher, one does not know what, if any, step he missed. the steps are not functional because they are not overt.

(3) Is there immediate feedback on each step? No, he could go on making the same error and one would not know how to correct errors at each step.

Since these steps in the operations of handling skills and concepts in the symbolic world are not as neatly observed as those in the physical, there is a need to make them overt, and functional with immediate feedback on each. Let's look again at the word "run." To make the act of reading that word overt and functional as required in direct instruction the following procedure would occur:

(1) The teacher would tell the child to "sound out this word."

(2) She would then point to each letter and the child would sound out each letter,

(3) The teacher would acknowledge and praise each response.

(4) She would then tell the child to "say the word fast."

(5) The child would then say the whole word /run/.

(6) The teacher would again give feedback in the form of praise and acknowledgement of what the child did.

It can be seen that each step above can be observed empirically. They are overt. The teacher can correct errors

or praise correct responses at each step, because she can hear the child's responses. Each step is functional. If the child were to miss a sound for a particular letter, he would not be able to produce the correct word. Sounding each letter correctly will lead him to the end of the operation. At each step the teacher can give feedback and reinforcement.

We have just briefly examined the "what" of direct instruction. We have seen that it involves three main constructs that are aimed at teaching to the general case. These are discriminations--instruction developed to focus on the critical attributes of a concept, sequencing to include all the necessary skills in a logical framework and the use of operations that are overt and functional with immediate feedback.

Let's look now at the other component of direct instruction--the "how," the specific procedures for utilizing direct instruction.

These are two, management and teaching. Management involves the social behavior of the students. In order for the teacher to present tasks for learning, she needs to have the attention of the students and means of eliciting responses. Effective management revolves around the following:

(1) Seating arrangement--6-10 children are seated in a semi-circle around the teacher, close enough for her to touch them. Physical nearness is very reinforcing; it makes behavior control easier.

(2) Handling materials--materials are handled so the children can see them and touch them when necessary to indicate pointing-type responses.

(3) Stating and reinforcing the rules for management behavior. For example, telling the child, "Sit tall, think big, look at the book, listen to the teacher" all help create an atmosphere for learning while letting children know what is expected of them. Their following the rules then becomes a basis for receiving praise from the teacher.

(4) Use of signals to elicit responses. By telling the children to respond to a physical gesture such as a pointing or handclap also promotes good management but more than that, it encourages children to initiate their own responses instead of waiting for another child to answer. It also serves as a means for the teacher to evaluate the responses of a group unison response. If one child responds incorrectly in a group responding on signals, it will be instantly discernible and the teacher can correct the error immediately.

The second component of the "how" in direct instruction is the Teaching Strategy. This total strategy involves overall task activity and within-task activity.

The overall task activity is composed of three elements:

(1) Pre-task--teacher secures attention by stating or reviewing the rules "Sit tall, all eyes on the book."

(2) Task=teacher gives the children a task. "Sound out this word" or "we are going to read the title of the story."

(3) Post-task--the teacher reinforces correct responses or corrects errors.

The within-task activity encompasses a specific cycle whereby the teacher first demonstrates a skill to be learned. This is called modelling. She will say something like "Watch me, I can sound out this word." This is followed by "leading" the children by having them give the required response with her. She does this until they are responding firmly. She might say "Do it with me--mmaann." When she hears firm responses, she will test them by saying something like, "Try it by yourselves." The model-lead-test cycle is repeated over and over with each new task.

In summary, it can be said that direct instruction involves programming and teaching strategies, the "what" and "how." Programming or the "what" deals with the actual written content of what is to be taught. To be effective it is developed by the use of discriminations, appropriate sequencing, and functional opertions. Teaching strategies involve management and task components. Together these two comprise the "how" of direct instruction. The main emphasis in direct instruction is to teach to the general case. Hofmeister (1976) says it very well.

> Skill in recognizing an "unknown word, object, situation or phenomenom has been termed generalization" and it is not so mysterious as people might think. There are ways to teach for generalization and a failure to apply such instructional procedures often results in a less desirable method of learning, rote memory (p. 96).

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